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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,323	12/04/2001	Masayuki Mishima	Q67519	9759

7590 12/17/2004

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EXAMINER	
COLON, GERMAN	
ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/000,323	MISHIMA, MASAYUKI	
	Examiner	Art Unit	
	German Colón	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 21-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 21-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 02, 2004 has been entered.

Response to Amendment

2. The Amendment, filed on November 02, 2004, has been entered and acknowledged by the Examiner.

3. Cancellation of claims 12-20 has been entered.

4. Addition of claims 21-23 has been entered.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-11 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moriyama et al. (US 2002/0068192) in view of Onitsuka et al. (US 6,049,167), further in view of Tsai et al. (US 6,566,805).

Regarding claim 1, Moriyama discloses a method of producing a light-emitting device comprising the steps of disposing a transparent electrode **2**, one or more organic layers **3** and a back side electrode **5** on a substrate **1** to provide a light-emitting structure, and disposing sealing parts **6** on said light-emitting structure to isolate said one or more organic layers from external air, wherein said one or more organic layers comprises a light-emitting layer **3** containing a phosphorescent compound (see paragraph [0048]). Moriyama teaches the detrimental effects caused by moisture and oxygen to the OLED (see paragraphs [0019] and [0020]) but is silent regarding their concentrations within the sealed atmosphere and the specific steps of the sealing process.

However, in the same field of endeavor, Onitsuka discloses a method of sealing a light emitting device comprising the steps of disposing a substrate containing a transparent electrode, a light emitting layer and a back side electrode, and sealing parts, in an inert gas atmosphere where the moisture concentration is 100 ppm or less (see at least Figs. 1 and 2 in view of Col. 3, lines 13-18) with the purpose of decreasing the costs of manufacture by reducing and simplifying the number of steps in the production of the organic EL devices, while eliminating the need of providing additional parts such as a filling port for introducing the inert gas to the sealed device (see Col. 2, lines 55-59 and Col. 3, lines 19-20). Further, Onitsuka teaches a moisture concentration below 100 ppm to decrease the degradation of the electrode layers and the light emitting layer, thereby reducing the number of dark spots in the device (see Col. 1, lines 27-32 in view of Col. 6, lines 1-3 and Col. 19, lines 27-29). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to seal the device of Moriyama by the method disclosed by Onitsuka and its specific moisture concentration, in order to decrease the

costs of manufacture by reducing and simplifying the number of steps in the production of the organic EL devices, while eliminating the need of providing additional parts such as a filling port for introducing the inert gas to the sealed device; and further, to decrease the degradation of the electrode layers and the light emitting layer, thereby reducing the number of dark spots in the device.

Moriyama-Onitsuka discloses the claimed invention but is silent regarding the preferred concentration of oxygen within the sealed atmosphere. However, in the same field of endeavor, Tsai teaches that in order to avoid the adverse effects of oxygen and moisture in an OLED, which deteriorate the performance and decrease the lifetime of the device (see Col. 2, lines 6-19, and Col. 3, lines 1-7), the required content of both oxygen and water (moisture) should be no more than 1 ppm (see Col. 3, lines 9-10). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the inert gas of Moriyama-Onitsuka with an oxygen content of not more than 1 ppm, to avoid the adverse effects of oxygen which deteriorates the performance and decreases the lifetime of the device.

Regarding claim 2, Moriyama-Onitsuka discloses said one or more organic layers being isolated form external air after disposing said one or more organic layers until said sealing parts are disposed (see paragraph [0071] and [0082] of `192; and Col. 11, lines 1-39 of `167).

Regarding claims 3 and 4, Moriyama-Onitsuka-Tsai discloses both of said moisture concentration and said oxygen concentration being 1 ppm or less (see `167, Col. 6, lines 1-3; and `805, Col. 3, lines 9-10).

Referring to claim 5, Moriyama discloses at least one of said organic layers being formed by a wet film-forming method (see paragraph [0047], lines 9-10).

Referring to claim 6, Moriyama discloses said one or more organic layers comprising a hole-injecting layer in contact with said light-emitting layer and said hole-injecting layer over said transparent electrode (see paragraph [0047], lines 3-9).

Referring to claim 7, Moriyama discloses at least both of said hole-injecting layer and said light-emitting layer being formed by a wet film-forming method (see paragraph [0047], lines 6-8 in view of lines 9-10).

Regarding claim 8, Moriyama discloses said one or more organic layers further comprising an electron-transporting layer between said light-emitting layer and said back side electrode (see paragraph [0047], lines 3-9).

Regarding claim 9, Moriyama discloses a weight ratio of said phosphorescent compound in said light-emitting layer being in a range of 0.1 to 70 wt% (see paragraph [0066] lines 4-5).

Regarding claim 10, Moriyama discloses said phosphorescent compound being an ortho-metallation complex (see paragraph [0048], lines 5-8, and paragraph [0066], line 4).

Regarding claim 11, Moriyama discloses an UV-hardening resin being used in combination with said sealing parts to isolate said one or more organic layers from external air (see paragraph [0056] lines 4-5).

Referring to claims 21-22, the claims are rejected over the reasons stated in the rejection of claims 1 and 2.

Referring to claim 23, the claim is rejected over the reasons stated in the rejection of claims 1, 2 and 5.

7. Claims 1-11 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldo et al. (US 6,097,147) in view of Onitsuka et al. (US 6,049,167), further in view of Tsai et al. (US 6,566,805).

Regarding claim 1, Baldo discloses a method of producing a light-emitting device (see Fig. 3) comprising the steps of disposing a transparent electrode **511**, one or more organic layers **512-515** and a back side electrode **516** on a substrate **510** to provide a light-emitting structure, wherein said one or more organic layers comprises a light-emitting layer **513** containing a phosphorescent compound. Baldo is silent regarding the limitation of "disposing sealing parts to isolate said one or more organic layers from external air, wherein said sealing parts are disposed in an inert gas atmosphere where both of a moisture concentration and oxygen concentration are 100 ppm or less".

However, in the same field of endeavor, Onitsuka discloses a method of sealing a light emitting device comprising the steps of disposing a substrate containing a transparent electrode, a light emitting layer and a back side electrode, and sealing parts, in an inert gas atmosphere where the moisture concentration is 100 ppm or less (see at least Figs. 1 and 2 in view of Col. 3, lines 13-18) with the purpose of decreasing the costs of manufacture by reducing and simplifying the number of steps in the production of the organic EL devices, while eliminating the need of providing additional parts such as a filling port for introducing the inert gas to the sealed device (see Col. 2, lines 55-59 and Col. 3, lines 19-20). Further, Onitsuka teaches a moisture concentration below 100 ppm to decrease the degradation of the electrode layers and the light emitting layer, thereby reducing the number of dark spots in the device (see Col. 1, lines 27-32 in view of Col. 6, lines 1-3 and Col. 19, lines 27-29). Thus, it would have been obvious to one of

ordinary skill in the art at the time the invention was made to seal the device of Baldo by the method disclosed by Onitsuka and its specific moisture concentration, in order to decrease the costs of manufacture by reducing and simplifying the number of steps in the production of the organic EL devices, while eliminating the need of providing additional parts such as a filling port for introducing the inert gas to the sealed device; and further, to decrease the degradation of the electrode layers and the light emitting layer, thereby reducing the number of dark spots in the device.

Baldo-Onitsuka discloses the claimed invention but is silent regarding the preferred concentration of oxygen within the sealed atmosphere. However, in the same field of endeavor, Tsai teaches that in order to avoid the adverse effects of oxygen and moisture in an OLED, which deteriorate the performance and decrease the lifetime of the device (see Col. 2, lines 6-19, and Col. 3, lines 1-7), the required content of both oxygen and water (moisture) should be no more than 1 ppm (see Col. 3, lines 9-10). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the inert gas of Baldo-Onitsuka with an oxygen content of not more than 1 ppm, to avoid the adverse effects of oxygen which deteriorates the performance and decreases the lifetime of the device.

Regarding claim 2, Baldo-Onitsuka-Tsai discloses said one or more organic layers being isolated form external air after disposing said one or more organic layers until said sealing parts are disposed (see Col. 11, lines 1-39 of '167).

Regarding claims 3 and 4, Baldo-Onitsuka-Tsai discloses both the moisture concentration and the oxygen concentration being 1 ppm or less.

Regarding claim 5, Baldo discloses the at least one of said organic layers being formed by a wet film-forming method (see Col. 5, lines 49-51).

Regarding claim 6, Baldo discloses said one or more organic layers comprising a hole-injecting layer in contact with said light-emitting layer and said hole-injecting layer over said transparent electrode (see Fig. 3).

Referring to claim 7, Baldo discloses at least both of said hole-injecting layer and said light-emitting layer being formed by a wet film-forming method (see Col. 5, lines 49-51).

Referring to claim 8, Baldo discloses said one or more organic layers further comprising an electron-transporting layer between said light-emitting layer and said back side electrode (see Fig. 3).

Referring to claim 9, Baldo discloses a weight ratio of said phosphorescent compound in said light-emitting layer being in a range of 0.1 to 70 wt% (see Col. 6, line 11).

Referring to claim 10, Baldo discloses said phosphorescent compound being an ortho-metallation complex (see Col. 6, line 11).

Regarding claim 11, Baldo-Onitsuka-Tsai discloses an UV-hardening resin being used in combination with said sealing parts to isolate said one or more organic layers from external air (see `167, at least Col. 3, lines 20-21).

Referring to claims 21-22, the claims are rejected over the reasons stated in the rejection of claims 1 and 2.

Referring to claim 23, the claim is rejected over the reasons stated in the rejection of claims 1, 2 and 5.

Response to Arguments

8. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

The Examiner has presented new grounds of rejection to clarify the position taken in the Advisory Action mailed August 31, 2004. The new rejection clearly teaches the desirability of including an inert gas with low oxygen and moisture concentrations in the process of sealing the device, without requiring more than ordinary skills in the art, as alleged by Applicant.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to German Colón whose telephone number is 571-272-2451. The examiner can normally be reached on Monday thru Thursday, from 8:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

gc

Karabi Guharay